2. Specific Course Requirements—The General Curriculum

It is imperative that the student take these specific General Curriculum Courses first.

FRESHMEN YEAR: 32 semester hours from courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eh 101-102 English Composition</td>
<td>6</td>
</tr>
<tr>
<td>HI 101-102 Western Civilization</td>
<td>6</td>
</tr>
<tr>
<td>Foreign Language 101-102 Elementary</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics (See Note 3 on following page)</td>
<td>6</td>
</tr>
<tr>
<td>Physical Education (2 activity courses, beginning with orientation)</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory Science (2 semesters of the same Science), Biology or Chemistry (or Physics in 2nd year)</td>
<td>8</td>
</tr>
</tbody>
</table>

SOPHOMORE YEAR: A total of 32 semester hours should be taken to include first year courses not taken earlier and:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eh 201-202 Masterpieces of English Literature or Eh 203-204 Masterpieces of World Literature</td>
<td>6</td>
</tr>
<tr>
<td>Foreign Languages 201-202 Intermediate (2 semesters of the same language; qualified students having 2 years of the same language in high school may take this in their first year)</td>
<td>6</td>
</tr>
<tr>
<td>Social Sciences; one course from each of two fields—Economics, Geography, Political Science, Sociology</td>
<td>4</td>
</tr>
<tr>
<td>Physical Education (2 activity courses)</td>
<td>2</td>
</tr>
</tbody>
</table>

The student must choose a major department in conference with the head of that department before the end of the Sophomore year, and he should notify the Dean of Students on a form provided in his office.

JUNIOR YEAR: A total of 32 semester hours including major and minor courses and:

<table>
<thead>
<tr>
<th>Course</th>
<th>Sem. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 300 Appreciation of Art</td>
<td>2</td>
</tr>
<tr>
<td>Mu 300 Appreciation of Music</td>
<td>2</td>
</tr>
</tbody>
</table>

Every candidate for a degree must file with the Registrar an application for that degree not later than the end of his junior year. It is the responsibility of the student to see that all graduation requirements are met.

SENIOR YEAR: A total of 32 semester hours or enough to make a cumulative total of 198 semester hours, including the requirements listed above and those of the major and minor departments for the A.B. or B.S. degree.
The last thirty-two semester hours must be earned in residence at Howard College.

Note 1. English 103: Entering students with superior placement scores may be granted permission to enroll in English 103. Instead of English 101, students with superior scores will take an advanced course in literature (sophomore or junior level English). English 100: Entering students whose placement scores indicate deficiencies in English will be required to take an intensive course in English before enrolling in English 101. An additional course in English will be required of Juniors who have a "C" in English Composition or whose scores on the AAT are not satisfactory.

Note 2. French, German or Spanish is usually taken by the students. Another language or Latin or Greek may be substituted. Students having two years of the same language in high school or students who are otherwise qualified may enroll in 201-202 of this language in the first year. A foreign language may be required for the B.M., B.S. in Pharmacy, B.S. in Bus. Adm., and the Ed. degrees.

Note 3. Candidates for the Bachelor of Science Degree should take courses followed by trigonometry unless special courses are required by the College of Arts and Sciences. These courses emphasize the philosophy, history, logic, and the natural values of modern mathematics in an attempt to enable the student to read, write, and speak effectively the language of mathematics.

The aggregate of credit earned in any type of off-campus training such as extension, correspondence, military service and by examination may not exceed thirty-two semester hours. Regularly enrolled students must secure in advance written permission to list such credit when it is to be applied to the graduation requirement.

Regardless of academic achievement a student on disciplinary probation may not graduate from Howard College until the probation has been removed.

HONORS AT GRADUATION. Students who during their course establish a quality-point ratio of 2.4 are graduated cum laude; those who establish a quality-point ratio of 2.7 are graduated with magna cum laude; and those with a quality-point ratio of 2.9 are graduated summa cum laude.

ADDITIONAL DEGREES: A student who has graduated with the A.B. or the B.S. degree may not thereafter receive the other of these two degrees. This requirement does not apply to the B.S. in Pharmacy, the B.S. in Business Administration, or the LL.B. degrees.

3. Major and Minor

Before the end of the sophomore year a major and minor field of concentration should be chosen with the approval of the head of the departments selected. A faculty member from the major department will thereafter be the student's advisor with the responsibility of checking and approving the Major-student's schedule each registration period. Transfer students must take a minimum of two courses in the major field and one course in the minor field in residence at Howard College.

MAJOR: This consists of the completion of the proper sequence of twenty-four, or more, semester hours of course work above the first year course specifically required in the General Curriculum with an average grade of "C." A maximum of forty-two (42) semester hours in the major, or a maximum combined total of seventy-five (75) semester hours in an interdepartmental area of concentration, may be applied to the 128 semester hours required as a minimum for graduation. However, a student seeking a degree in Business Administration, Applied Music, and Pharmacy must take a minimum of 64 semester hours of course work in the liberal arts and sciences including economics.

The departmental major must include four courses, a minimum of twelve semester hours, at the junior and senior level. Extension class credit and correspondence study credit should not be applied to the major requirements.

Minor: A minor is equivalent to three years of work in a department. It covers a minimum of eighteen semester hours and in the sciences may be twenty-two hours or even more. A "C" average is required in the minor. The minor must include at least six to ten hours at the junior or senior level. A transfer student must take at least one course in his minor at Howard College.

NOTE: A minimum of 40 semester hours of the 128 required for graduation must be completed in Junior-Senior level courses.

THE DEGREE WITH HONORS

To encourage a spirit of independent reading and research the faculty will admit qualified students entering the senior year as candidates for the Degree with Honors in their respective areas of concentration. To be admitted to candidacy a student must have a passing grade in all subjects attempted, must have a general average of 2.00 in 90 semester hours attempted, and an average of 2.5 in his chosen department.

Each candidate will have an advisory committee with his research professor as the chairman. This committee will approve his program and his thesis. The members of the committee, with the Academic Dean, will conduct an oral examination of the candidate to which all interested faculty members are invited. The committee and their examiners recommend the candidate to the faculty after all requirements are met for the degree he has earned.

THE GRADING SYSTEM

In Howard College grades are indicated by the symbols A, C, D, E, F, and Inc.
203. ADVANCED QUANTITATIVE ANALYSIS. A study of more complex materials and their analysis, using advanced analytical processes and techniques, including some instrumental analysis. Lectures and recitations, two hours a week; laboratory, six hours a week. Credit, four hours.

201-202. ORGANIC CHEMISTRY. An introduction to the important classes of carbon compounds, both aliphatic and aromatic. Lectures, three hours a week; laboratory, three hours a week. Credit, eight hours. Prerequisite: Chemistry 111-112.

211. ORGANIC QUALITATIVE ANALYSIS. Application of the principles of organic chemistry to the separation and identification of type compounds and unknowns. Lectures, one hour a week; laboratory, six hours a week. Credit, three hours. Prerequisite: Organic Chemistry.

222. BIOCHEMISTRY. An introduction to general human physiological chemistry. Lectures and recitations, three hours a week; laboratory, three hours a week. Credit, four hours. Prerequisite: Organic Chemistry.

201-202. PHYSICAL CHEMISTRY. Exposition of the basic theories regarding atomic and molecular structure, states of matter, chemical equilibria, kinetics, thermodynamics, phase rule, electrochemistry, etc. Lectures, three hours a week; laboratory, three hours a week. Credit, eight hours. Prerequisites: Differential and Integral Calculus, basic chemistry courses, and Physics 203-204.

411. ADVANCED INORGANIC CHEMISTRY. A discussion of the electronic structure of atoms and molecules and correlation with the properties of inorganic materials. Lectures, three hours a week. Credit, three hours. Prerequisite: Permission of the instructor.

412. ADVANCED ORGANIC PREPARATION. Synthesis of organic compounds through the application of more advanced reactions and techniques. Lectures, one hour a week; laboratory, six hours a week. Credit, three hours. Prerequisite: Permission of the instructor.

415. RADIOCHEMISTRY. A study of nuclear stability, the radioactivity decay laws, natural radioactivity, new and radioactivity, detection apparatus and techniques, artificial radioactivity, nuclear fission, low concentration chemistry, radon, radioactive tracer techniques, radiation chemistry, and safety precautions in the use of radioactivity. Lectures, three hours a week; laboratory, three hours a week. Credit, four hours. Prerequisite: Permission of the instructor.

421-422. UNDERGRADUATE RESEARCH. Investigation in the laboratory or literature of assigned problems, the results of which will be presented in an acceptable paper. Credit, two to eight hours.

DEPARTMENT OF MATHEMATICS AND ENGINEERING

PROFESSORS WHEELER AND PEELPS
ASSOCIATE PROFESSOR BISHOP
ASSISTANT PROFESSOR MORRIS
MRS. YEAGER, MR. WHITE, MR. FAULKNER,
MISS HOWARD AND MRS. SUTTLES

The Department of Mathematics at Howard College subscribes to the general purposes and objectives of the college and endeavors to cooperate with other departments in the development of Christian character and high scholastic standing. In addition, the Department of Mathematics encourages students of mathematics to achieve the following goals:

1. To acquire the ability to use the language of mathematics effectively, including the ability to write and speak ideas involving mathematical terms, to read technical manuscripts with speed and understanding, and to listen intelligently.

2. To attain an understanding of mathematics necessary for successfully meeting the complex demands of modern society.
3. To apply the principles of logic and reason to mathematics and to all areas of study.

4. To develop an understanding of mathematical theory in addition to skill in manipulation and problem solving.

5. To master the mathematics essential for a professional mathematical career.

Mathematics 103, 201, 202, and 203 shall be required for a major or minor in mathematics. In addition, the minimum requirement of at least twelve hours for a major or six hours for a minor selected from junior and senior courses must be satisfied.

Pre-medical and pre-dental students and students whose area of concentration is pharmacy, chemistry, physics, business administration, or engineering are subject to specific requirements in mathematics and should consult with the head of the department concerned.

Candidates for the Bachelor of Science degree should take Algebra followed by Trigonometry unless special courses are required by the major department. Special courses (Mathematics 111, Central Elementary College Mathematics, and Statistics) are recommended for the Bachelor of Arts degree.

Graduate students should consult with the department head to determine their requirements. Only those courses numbered 400 above can be counted for graduate credit.

**MATHEMATICS**

111. GENERAL ELEMENTARY COLLEGE MATHEMATICS. This course is designed as well as those working toward a teachers certificate in elementary education. This course is an attempt to enable the student to read, write, and speak effectively those language.

100. INTERMEDIATE COLLEGE ALGEBRA. This course is designed primarily for those whose curriculum requirements include college algebra, but whose grade on the entrance test does not meet the requirements for enrollment in college algebra. Credit, three hours.

101. COLLEGE ALGEBRA. Prerequisite: Math. 100, or a year of high school algebra and a satisfactory score on the entrance test. Credit, three hours.

202. TRIGONOMETRY. Prerequisite: Plane Geometry and Mathematics 101 (or equivalent). Credit, three hours.

03. ANALYTIC GEOMETRY. Prerequisite: Mathematics 101 and 102. Credit, 3 hours.

08. MODERN MATHEMATICS FOR BUSINESS DECISIONS. Prerequisite: Mathematics 101. Credit, three hours.

12. MATHEMATICS FOR ELEMENTARY TEACHERS. Credit, three hours.

01. DIFFERENTIAL CALCULUS. (This course is usually offered a combined with mathematics 103.) Credit, three hours.

25. INTEGRAL CALCULUS. Credit, three hours.

30. INTERMEDIATE CALCULUS. Credit, three hours.

35. STATISTICS. Designed to present the statistics needed to understand factual information as well as probability decision making in today's complex civilization. Credit, 3 hours.

**ENGINEERING**

A minor in engineering may be obtained by successfully completing Eq. 102, 103, 107, 200, 303, and three courses on the advanced level selected from Eq. 301, 302, 303, 304, 305, and 310.

Eq. 102. ENGINEERING DRAWING I. An introduction to the principles and practices involved in the construction of engineering drawings. Credit, two hours.

Eq. 103. ENGINEERING DRAWING II. Prerequisite: Eq. 102. A continuation of Eq. 102. Credit, two hours.

Eq. 104. SURVEYING. Prerequisite: Math 101. Credit, three hours.

Eq. 110. ENGINEERING GEOMETRY. Credit, three hours.

Eq. 111. MATH. 101 & 201 and Ph 203 with a co-requisite of Math 102 and Ph 204. An introductory course to the physical properties of engineering materials and basic concepts of phase information. Credit, three hours.

Eq. 301-302. ELECTRICAL ENGINEERING. See Physics 301, 302.

Eq. 303. THERMODYNAMICS. See Physics 303.

Eq. 304. ENGINEERING MECHANICS: STATIC. Prerequisite: Math. 101, Ph 203, (or prerequisite: Math 102). Topics of study include laws of equilibrium, friction, simple trusses, centroids, and moment of inertia. Credit, three hours.

Eq. 305. ELECTRONICS. See Physics 307.

Eq. 306. ENGINEERING STATISTICS AND QUALITY CONTROL. Prerequisite: For engineers, junior standing; for Industrial Management, BSH 330. Credit, three hours.

Eq. 307. ELECTRICAL ENGINEERING. See Physics 307.

Eq. 308. ADVANCED COMPUTER PROGRAMMING. Prerequisite Mathematics 307. Credit, three hours.

Eq. 400-407. ENGINEERING MATHEMATICS. See Math 400, 407.

Eq. 408. ADVANCED ELECTRONICS. See Physics 408.